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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/690,595	10/17/2000	Michael O. Okoroafor	1636A1	2590

24959 7590 03/27/2002

PPG INDUSTRIES INC  
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EXAMINER

PENG, KUO LIANG

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 03/27/2002

4

Please find below and/or attached an Office communication concerning this application or proceeding.

T.D-4

<b>Office Action Summary</b>	Application No. 09/690,595	Applicant(s) OKOROA FOR ET AL.	
	Examiner Kuo-Liang Peng	Art Unit 1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 3/22/01 IDS.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-97 is/are pending in the application.
- 4a) Of the above claim(s) 56-93, 96 and 97 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 18, 25-35, 41 and 55 is/are rejected.
- 7) ☒ Claim(s) 4, 6-17, 19-24, 28-40, 42-54, 94 and 95 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
     If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:  
         1. ☐ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
     \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
     a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2-3</u> | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-55 and 94-95, drawn to a polymerizable organic composition and a polymerizate thereof, classified in class 526, subclass 324.
  - II. Claims 56-93 and 96-97, drawn to a photochromic article, classified in class 252, subclass 589.
  
2. Inventions of Group I and Group II are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a coating composition that does not contain any photochromic substance, and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

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3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Ms. Carol A. Marmo on February 5, 2002 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-55 and 94-95. Affirmation of this election must be made by applicant in replying to this Office Action. Claims 56-93 and 96-97 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

#### *Claim Objections*

6. Claims 4, 6-12, 14-15, 23-24, 28-35, 37, 38 and 94-95 are objected to because of the following informalities:

Claim 4 recites the use of hydroxy alkyl (meth)acrylate chloroformate esters and hydroxyethylmethacryalte chloromate ester. However, it is noted that the scope of hydroxy alkyl (meth)acrylate chloroformate esters encompasses hydroxyethylmethacryalte chloromate ester.

Claims 6 and 29 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 6 and 29 are directed to a reactive hydrogen material "further comprises at least two reactive hydrogen groups selected from the group consisting of hydroxyl, primary amine, secondary amine and compounds having one or more thiol and one or more hydroxyl groups". However, Claims 3 and 27 recite a limitation of "a reactive hydrogen material which is a polythiol monomer having at least two thiol groups", which clearly does not include any other additional compounds.

Claims 8-10 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The general formulae in Claim 8-10 are substituted diamines (i.e., at least  $R_3$  and  $R_4$  are not hydrogens). However, the general formulae A) to C) in Claim 7 are unsubstituted diamines.

Claims 31-33 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The general formulae in Claim 31-33 are substituted diamines (i.e., at least  $R_3$  and  $R_4$  are not hydrogens). However, the general formulae A) to C) in Claim 30 are unsubstituted diamines.

In lines 2 of Claims 23 and 94, should "has" be -- and having -- as indicated in the specification (page 9, lines 18-25)?

In Claim 14 (page 43, line 5) and Claim 37 (page 52, line 6), should "-C(CH<sub>3</sub>)(C<sub>6</sub>H<sub>5</sub>)-" be -- -C(CH<sub>3</sub>)(C<sub>6</sub>H<sub>5</sub>)- --?

In line 2 of Claims 15 and 38, should "R3 and R4" be -- R<sub>3</sub> and R<sub>4</sub> --?

In line 1 of Claim 28, should "257" be -- 27 --?

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 4, 6-12 and 29-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "the precursor of said first monomer having terminal reactive hydrogen groups" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. Should it be -- the polythiol monomer -- as indicated in the specification (page 4, lines 15-27)?

In lines 1-3 of Claims 6 and 29 recite "the reactive hydrogen material further comprises at least two reactive hydrogen groups selected from the group consisting of hydroxyl, primary amine, secondary amine and compounds having one or more thiol and one or more hydroxyl groups". However, it is not clear as to the polythiol monomer (recited in Claim 3) further having

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at least two reactive hydrogen groups or an additional reactive hydrogen material (other than the polythiol monomer) having at least two reactive hydrogen groups. Should Claims 6 and 29 be directed to the reactive hydrogen material in Claims 3 and 27, respectively, further comprising a compound having at least two reactive hydrogen groups selected from the groups consisting of hydroxyl, primary amine and secondary amine as indicated in the specification (page 4, lines 21-23)?

9. In view of the objection and the rejection of Claims 6 and 29 described in paragraphs 6 and 8, the following Office Action is based on that “, which is” in line 2 of Claims 3 and 27 being replaced with -- comprising --;

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-3, 5, 18, 25-28, 41 and 55 are rejected under 35 U.S.C. 102(b) as being anticipated by Miranda (US 3, 600,359).

With respect to Claim 1, Miranda discloses a polymerizable organic composition comprising a acrylate monomer containing at least one acryloyl groups and thiourethane linkages as described in col. 2, line 28, wherein n is more than 1 (col. 2, lines 44-45), such as 2, 3, or 4 (col. 3, line 41).

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With respect to Claim 2, in addition to the acrylate monomer, Miranda further teaches the use of vinyl pyrrolidone which reads on Applicants' monoethylenically unsaturated monomer b-i).

With respect to Claim 3, Miranda further teaches that the acrylate monomer is prepared by reacting a polythiol monomer as described in col. 2, line 14 wherein n is more than 1 (col. 2, lines 44-45), such as 2, 3, or 4 (col. 3, line 41) with a diisocyanate (col. 2, line 17).

With respect to Claim 5, Miranda further teaches the use of n moles of the diisocyanate to react with 1 mole of polythiol which containing n moles of thiol groups (col. 2, lines 14-16). In other words, the molar ratio of NCO group to SH group is 2.0.

With respect to Claims 18 and 41, Miranda further teaches the use of polythiols such as trimethylolpropane tris(mercaptopropionate), pentaerythritol tetrakis(mercaptopropionate), etc. (col. 3, lines 20-43).

With respect to Claims 25, 27 and 28, Miranda further teaches a polymerizate prepared by the acrylate monomer (Example 1).

With respect to Claim 26, Miranda further teaches a polymerizate prepared by the acrylate monomer in the presence of pyrrolidone (Example 2).

With respect to Claim 55, Miranda further teaches the use of the composition as cured coatings for exterior sidings and for ceiling tiles (col. 6, lines 63-72). As such, the coated product is a shaped article.



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12. Claims 4, 6-12 and 29-35 would be allowable if rewritten to overcome the claim objection and the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Miranda does not teach the use of a) the functionalizing agents recited in Claim 4, b) the additional reactive hydrogen material recited in Claims 6 and 29.

13. Claims 13, 16-17, 19-21, 22, 36, 39-40 and 42-54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Miranda does not teach a) a composition comprising a second monomer recited in Claims 13, 16-17, 36 and 39-40, b) the specific polythiol oligomer in Claims 19-20 and 42-43, c) the monoethylenically unsaturated monomer recited Claims 21 and 44, d) the anhydride monomer recited in Claims 22 and 45, e) a polymerizate having the specific properties recited in Claim 46, f) an additive recited in Claims 47-48, g) a photochromic substance recited in Claim 49 or h) an initiating amount of a material capable of generating free radicals recited in Claims 50-54.

14. Claims 14-15, 23-24, 37-38 and 94-95 would be allowable if rewritten to overcome the claim objection, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Miranda does not teach a composition comprising a) a second monomer recited in Claims 14-15 and 37-38 or b) the polycyanate monomer recited in Claims 23-24 and 94-95.

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuo-Liang Peng whose telephone number is (703) 306-5550.

The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson, can be reached on (703) 308-2340. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Kuo-Liang Peng

March 11, 2002



Robert Dawson  
Supervisory Patent Examiner  
Technology Center 1700